PUBLIC HEALTH CARE CONSUMPTION: TRAGEDY OF THE COMMONS OR A COMMON GOOD?

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TABLE OF CONTENTS

I. Introduction

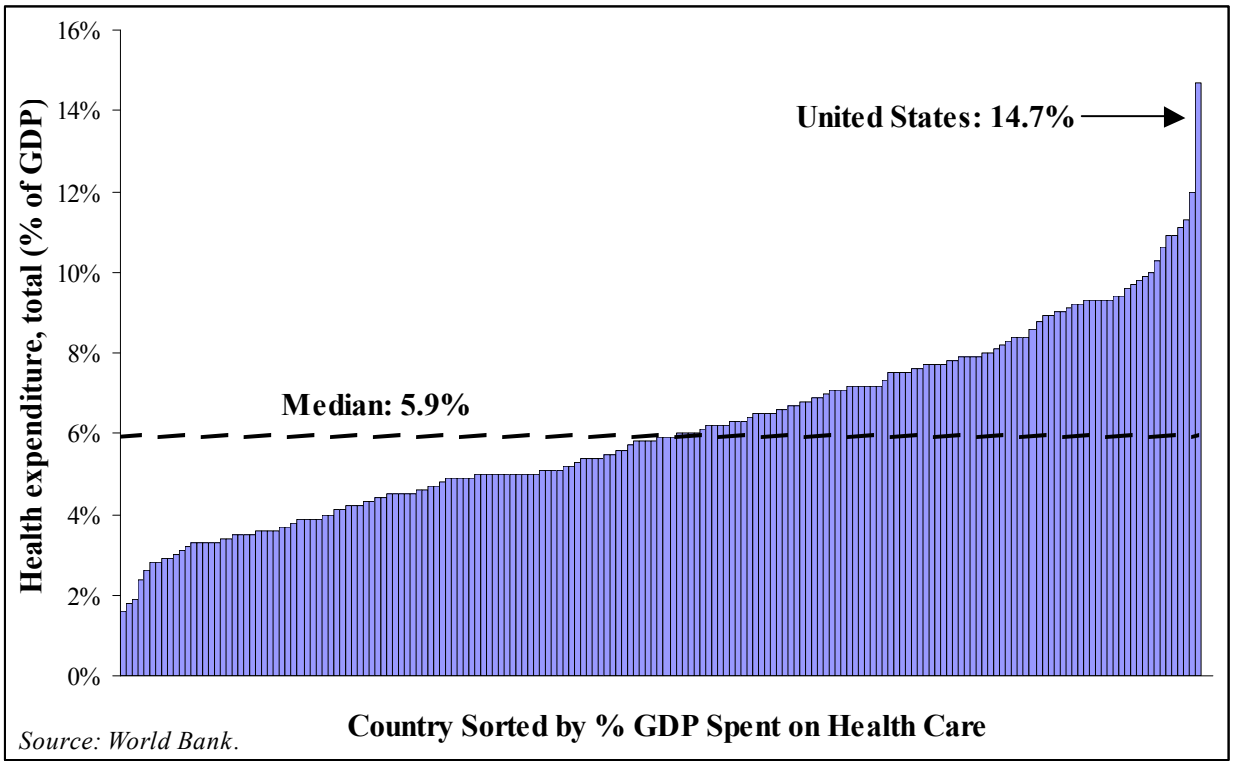
Skyrocketing health care costs in the United States have been a major public policy concern as population aging and the retirement of the baby boom generation have caught the public's eye. The United States is far and away the world leader in per capita health care expenditures, yet there is also much discussion about the country's poor health outcomes. While the United States ranked first in health care spending in 2002, it ranked 26th in life expectancy at birth.[1] The question then is whether these dollars are being spent wisely, or whether public policy can or should intervene in an effort to control these costs. Specifically, this paper seeks to answer whether the availability of public health insurance affects individuals' consumption patterns, especially when citizens become eligible for Medicare at age 65.

II. Background

It is no secret that the United States is an outlier in virtually every category of health care spending. In 2002, the United States ranked first in total health care spending, per capita health care spending and health care spending as a fraction of gross domestic product (GDP). As shown in Figure 1, not only is the United States the leader in health care spending as a fraction of GDP, it also maintains a significant lead over its nearest contender.

[1] Several non-health related factors are frequently cited as possible causes to low life expectancy at birth, including high fatality rates from traffic accidents and high homicide rates.

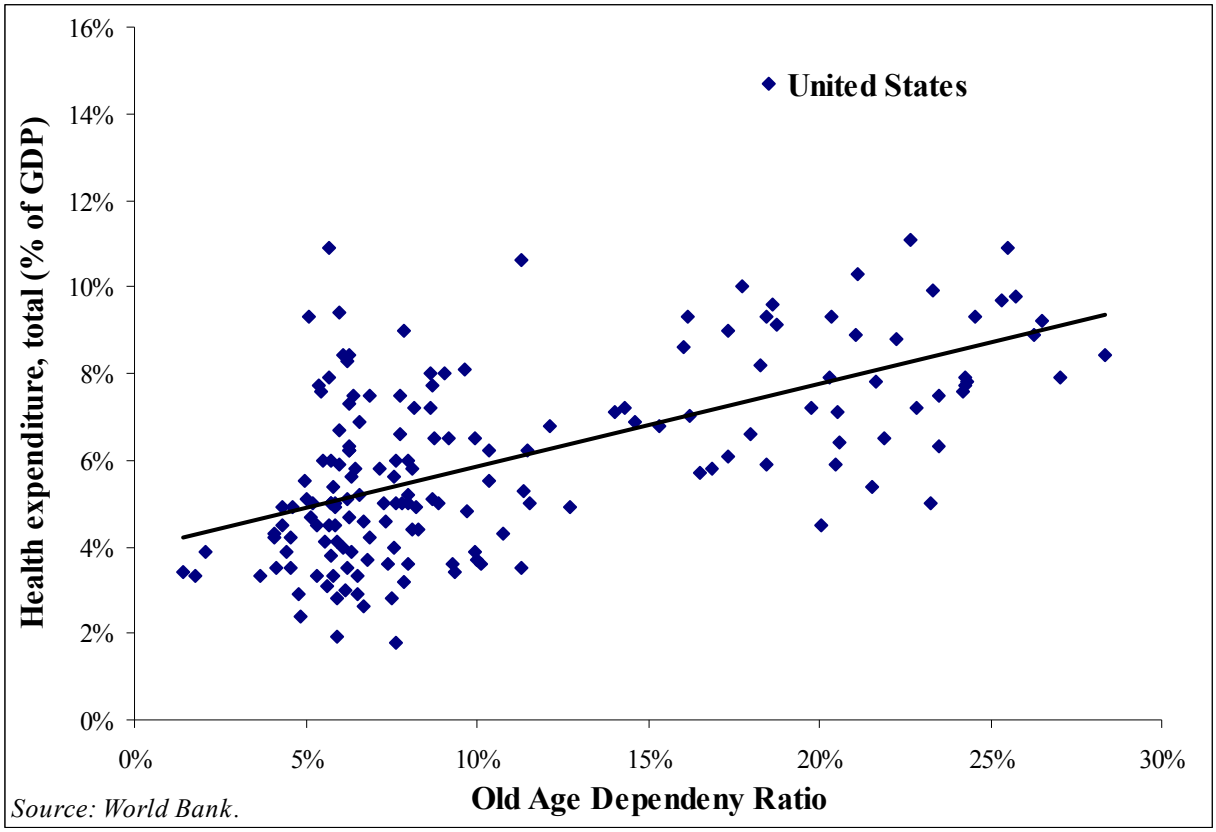
Figure 1: 2002 Percent of GDP Spent on Health Care



A country's age structure plays a major role in its level of health care spending, as the elderly are generally the largest consumers of health care services. While aging has been a recent hot topic in the United States with the impending retirement of the baby boom generation, age structure does not appear to be the major driver of its outrageous levels of health care spending. Figure 2 shows that while the Old Age Dependency Ratio (OADR)[2] does appear to be positively correlated with health care spending as a fraction of GDP, the OADR does not explain the level of health care spending for the United States.

[2] The Old Age Dependency Ratio is defined as the population 65 and older divided by the population aged 15 to 64.

Figure 2: Fraction of GDP Spent on Health Versus Fraction of Old Age Dependency Ratio

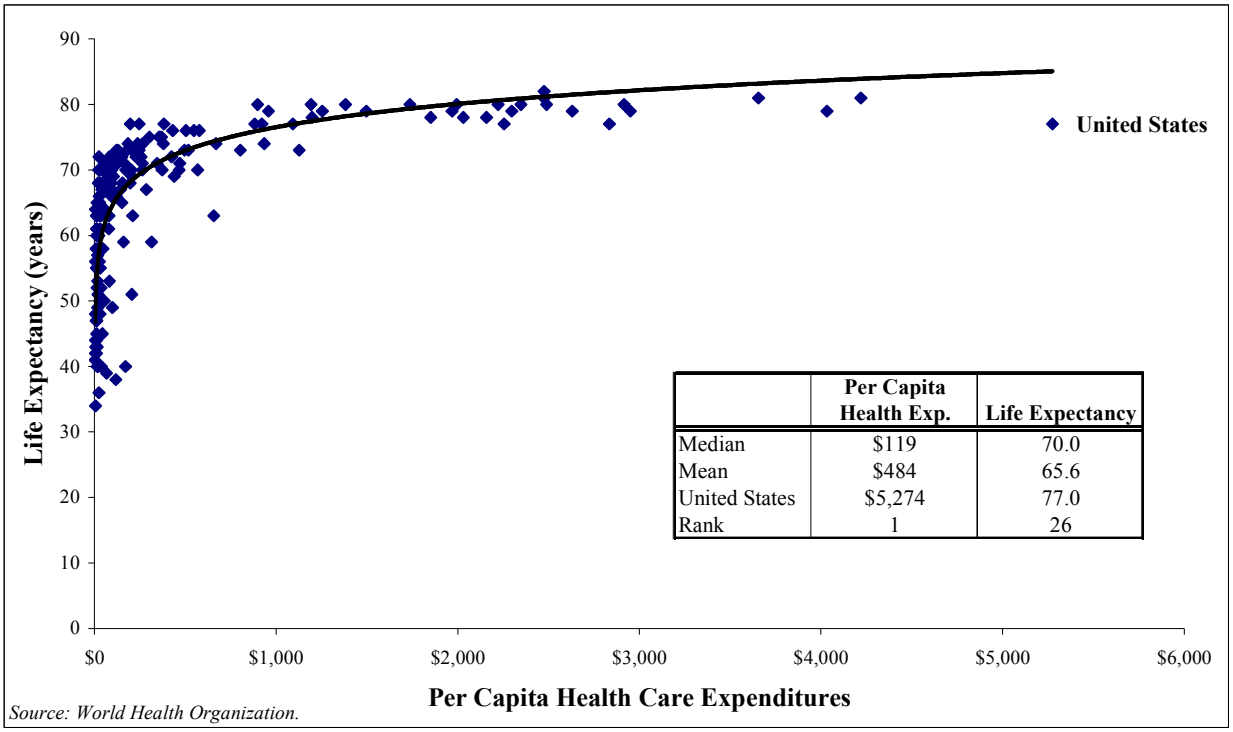


The key to determining whether such exorbitant spending is justified is whether the health outcomes improve with high levels of spending. Measuring the general wellbeing of a population is complex because how to measure the effect on the marginal health dollar on a person's wellbeing is not obvious. Certain expenses may not cause a person to live longer, but could cause a person to live more comfortably, in which case the expenditure raises the individual's wellbeing without affecting their life expectancy. Given these limitations, life expectancy at birth is a reasonable proxy for the overall health of a population, as a healthier population should live longer on average.[3] If health spending causes longer living, then we

[3] Life expectancy at birth has obvious limitations for measuring overall health, as it is affected by the age structure of a population, and it can be greatly influenced by factors exogenous to the medical field, like traffic fatalities. In addition, increased health care spending would likely have a lagged affect on health outcomes, most notably life expectancy. Nonetheless, it is a useful proxy here.

would expect the high spending in the United States to be correlated with high life expectancy, but many countries have been able to reach similar or higher life expectancies with vastly lower levels of per capita health expenditures. Figure 3 shows that in 2002 the United States ranked first in per capita health expenditures, but only 26th in life expectancy at birth. This figure begs the question of whether health care dollars in the United States are being spent efficiently, and whether public policy can or should play a role in controlling spiraling health care costs.

Figure 3: 2002 Period Life Expectancy vs. Per Capita Health Expenditures



	Per Capita Health Exp.	Life Expectancy
Median	$119	70.0
Mean	$484	65.6
United States	$5,274	77.0
Rank	1	26

Source: World Health Organization.

While this is a central theme in evaluating the effectiveness of health care spending, this paper will not focus on comparative health outcomes, but instead will focus on how the availability of different types of health insurance influence individual health care consumption.

III. Implications

If high per capita health care costs are simply the result of individuals in the private sector choosing to spend their income on health care, then this debate falls outside of the realm of direct public policy. However, if public spending is the major driver behind the enormous levels of per capita spending, then public health care could become a tragedy of the commons, where health care as a public good, when unchecked, may lead to over-consumption as people become eligible for public health insurance. For individuals in good health, examining their health care consumption patterns by age and type of health insurance may yield insight into whether overconsumption of public health care is a national concern.

If people consume more health care services as they become eligible for public insurance, like Medicare, we should see a spike in per capita health expenditures when the majority of the population becomes eligible for Medicare at age 65. However, if people use Medicare as a substitute for their previous health insurance, then we should expect no major deviations from the trend in total medical expenditures.

IV. Data: The Medical Expenditure Panel Survey (MEPS)

The Medical Expenditure Panel Survey (MEPS) is a nationally representative cross-sectional survey conducted by the United States Department of Health and Human Services (DHHS) analyzing health and medical expenditures for the non-institutionalized population. The survey was first conducted in 1996, and the most current available data is from 2003. This analysis combines all eight years worth of data by converting all figures into 2000 dollars based on Bureau of Labor Statistics price indexes and averaging across all years. This methodology masks changes in the level of expenditures over the time period. Since the survey only counts

the non-institutional population, this survey excludes people in nursing homes and prisons, the former being largely funded by Medicaid. It should therefore be expected that the estimates of total expenditures are likely to be conservative, especially at high ages.

Total expenditures are grossed up to match the totals reported in the National Health Accounts reported by the Centers for Medicare & Medicaid services. The totals from MEPS are increased to match the totals reported by source of funding and year. The sources of funding included in this analysis are Out of Pocket, Private Insurance, Other Private, Medicare, Medicaid and Other Public funds. Since the MEPS covers only the non-institutionalized population, Medicaid expenses for nursing home care are excluded from the control totals.

For this analysis, I break the data down by funding source, as described above, and by three types of health care insurance held by the individual:

1. Individuals with any private insurance
2. Individuals with only public insurance
3. Individuals with no health insurance

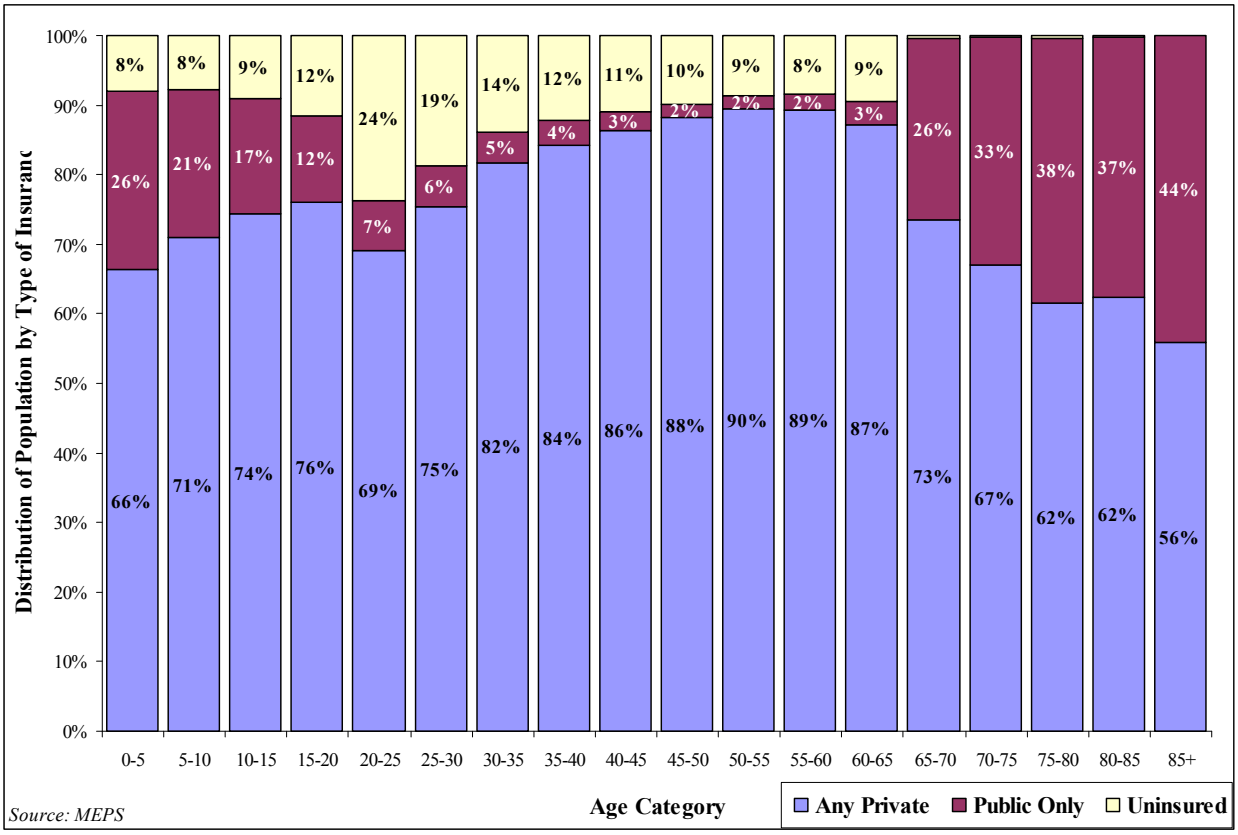
Further, since we would expect individuals already in poor health to consume above average levels of health services, and since a person's health status may determine their employment status and what types of insurance for which they qualify, controlling for health status is a necessary step. For example, Medicare covers people with certain disabilities at any age, making disabled people more likely have only public insurance, thus leading to higher consumption of public health care. In an effort to compare people with similar health care needs, this analysis focuses only on individuals who classify their health status as either "Very Good" or "Excellent." The subjective nature of self-reported health status could lead to selection bias – for

example, people may report their health status relative to others in their community – here it is assumed to be a reasonable proxy for an individual's health care needs.

V. Sample Population Characteristics

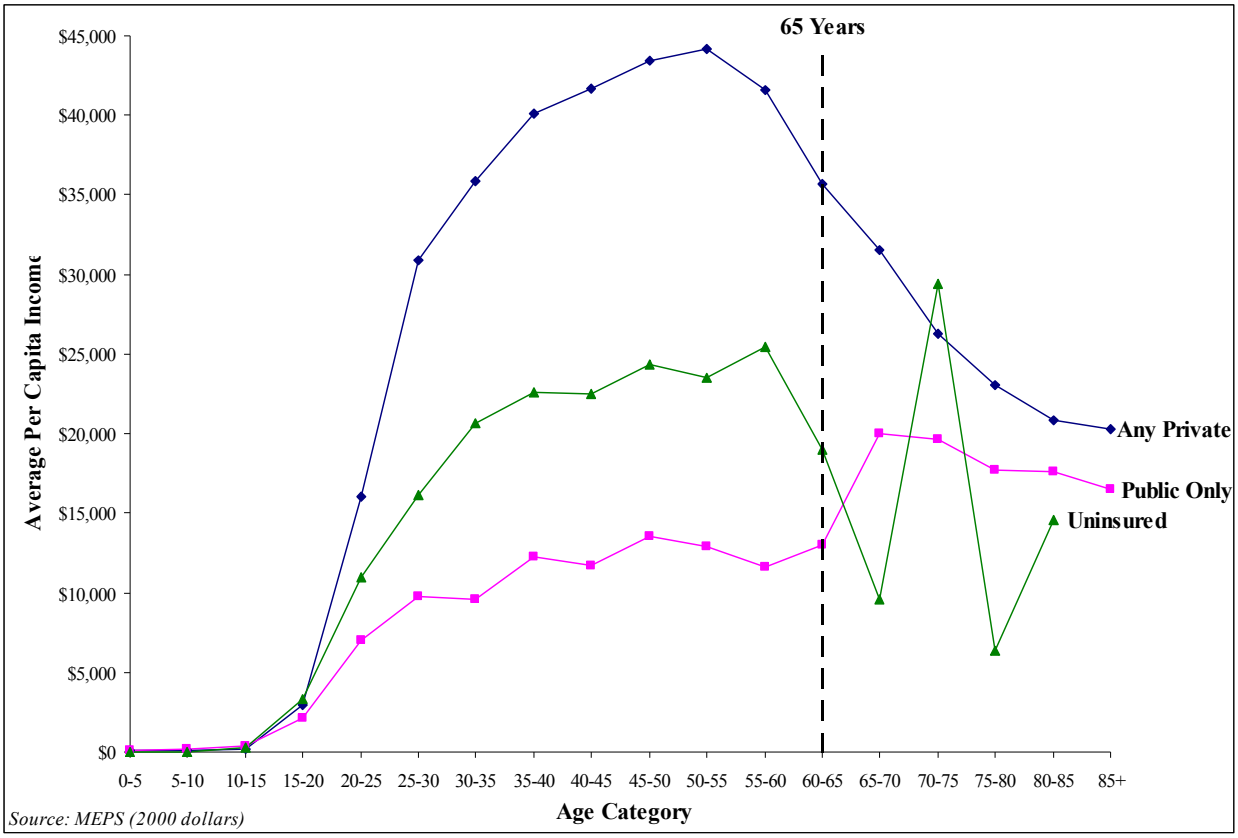
Figure 4 shows the distribution of the weighted sample population by their health insurance status. The fraction that is uninsured peaks for individuals in their early 20s, presumably as individuals finish schooling and lose eligibility under their parents' insurance plans. As expected, the fraction uninsured falls to virtually zero after age 65, where the vast majority of the population becomes eligible for Medicare. However, a large fraction of the population maintains some form of private health insurance even after qualifying for Medicare. The fraction of the healthy population relying solely on public insurance from ages 20 to 64 is quite small. It is important to note that this is a cross-sectional view of the population, but it nonetheless displays trends we would expect a priori.

Figure 4: MEPS Non-Institutionalized Population by Type of Health Insurance



Since Medicaid is the primary form of public health insurance provided to the poor of all ages, it seems reasonable to expect that those relying on public health insurance alone may have different income profiles from those with private health insurance. Figure 5, which shows the age profile of income by type of insurance, shows that on average healthy people relying on public health insurance have substantially lower incomes than either those privately insured or without any form of insurance. After age 65, average income increases dramatically, as much of the population presumably begins to rely on Medicare as its sole source of health care coverage. Not surprisingly, those still maintaining some form private health coverage have a higher per capita income than either of the other two groups. Fluctuations in income for uninsured individuals at high ages are largely explained by the very small sample size.

Figure 5: Per Capita Income by Type of Insurance



Despite obvious differences in per capita income for the three categories, and previous research showing that income is positively correlated with health outcomes, since these individuals all report either excellent or very good health we will assume that these differences will not affect their needs for health care services.

VI. Total Health Care Expenditures

The distribution of total expenditures across all sources of funding is shown in Figure 6. Private health insurance dominates funding sources before the age of 65, when Medicare spending becomes the largest overall source of funding. Private funding of health care hovers around 20 percent of total health care expenditures from the age of 25 until 65, after which public

expenditures become the majority of total health expenditures, and its share continues to increase.

Figure 6: Total Health Care Expenditures by Source of Funding and Age

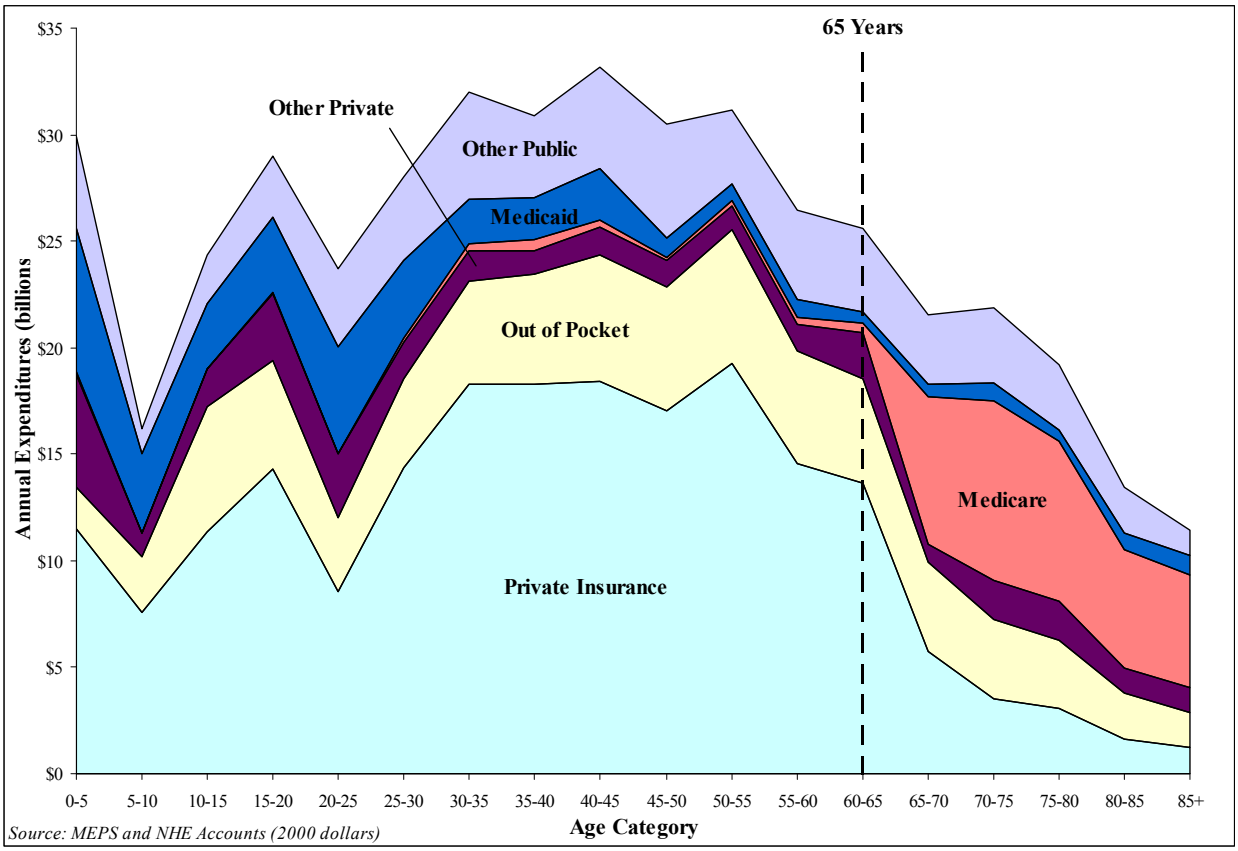
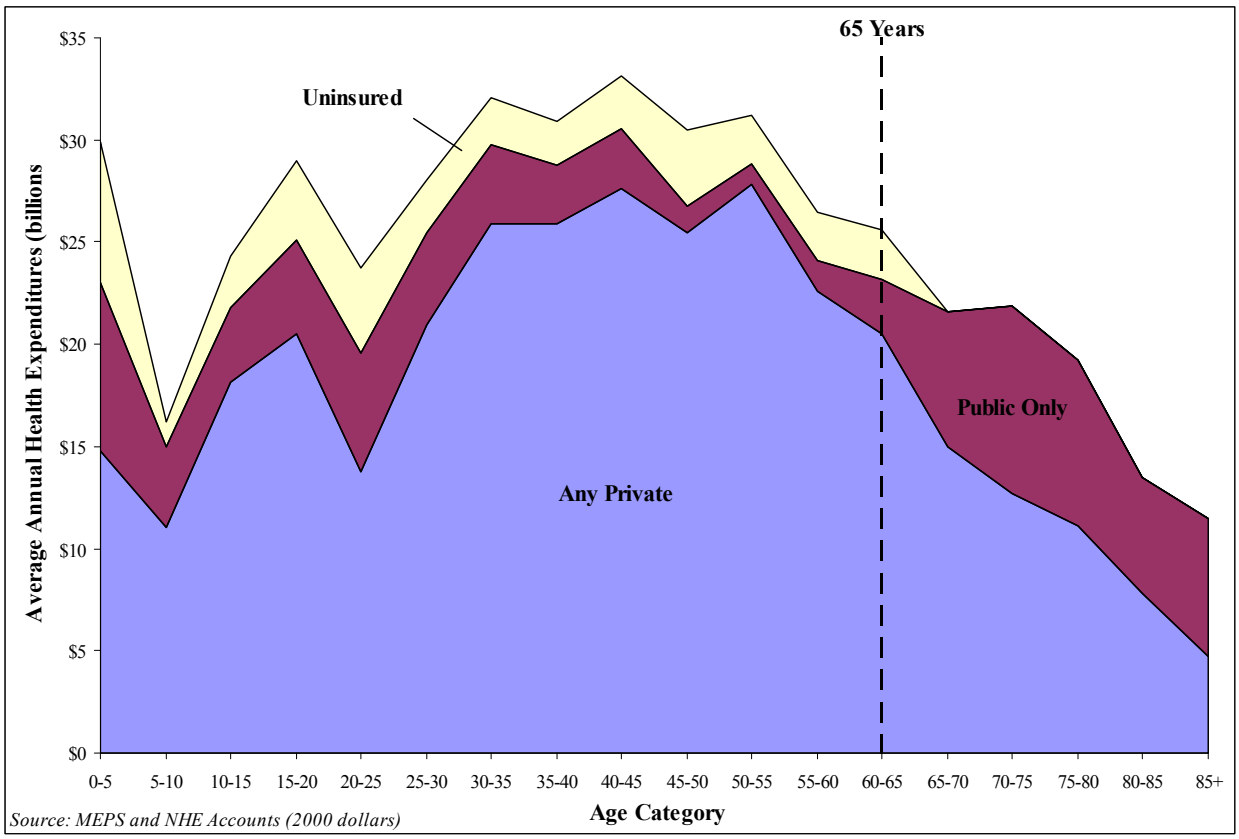


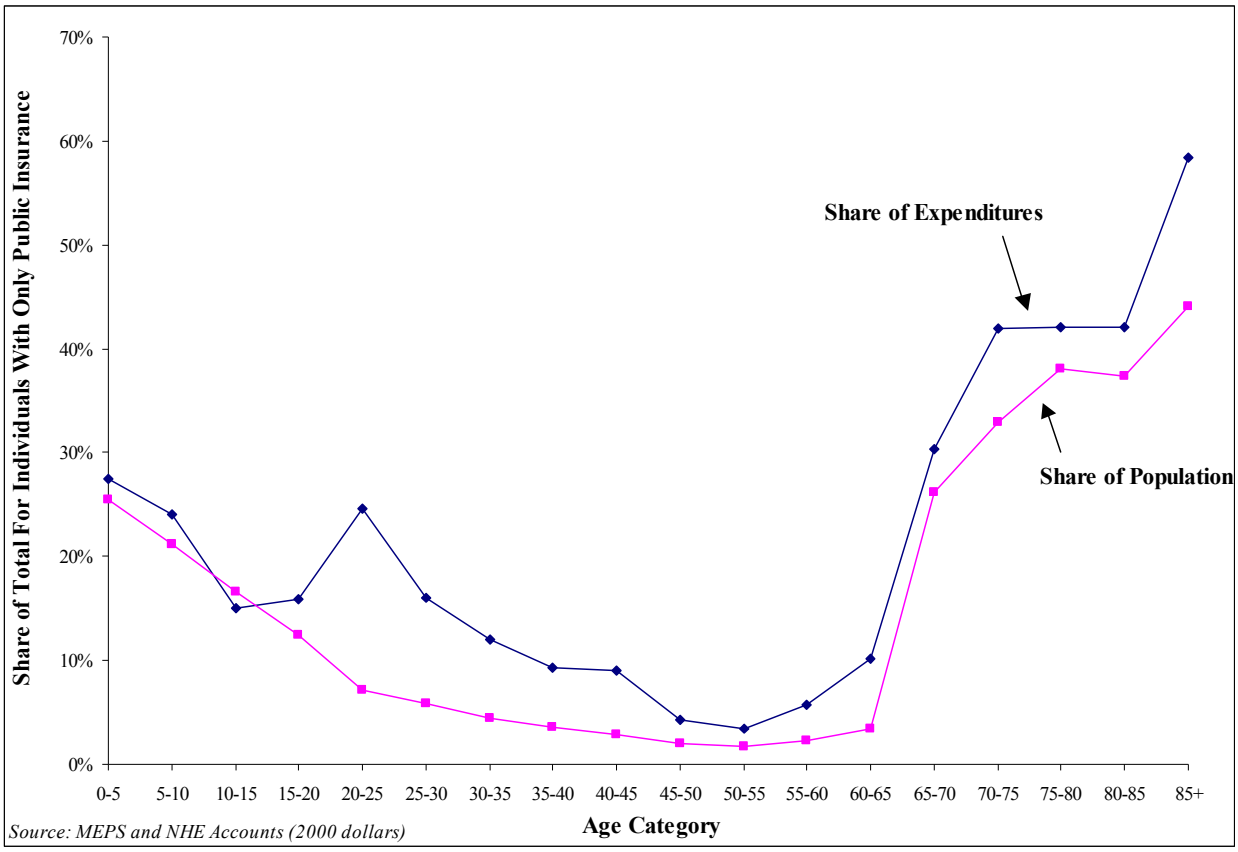
Figure 7 shows that individuals with some private health insurance consume the lion's share of total health expenditures at all but the very highest ages. The share of expenditures for individuals with only public insurance declines with age until age 65, when greater numbers of people crossover to using public funds as their only form of health insurance. The share of uninsured individuals remains relatively constant until age 65.

Figure 7: Total Personal Health Care Expenditures by Type of Insurance



The share of public only individuals remains consistently higher than its share of the population across virtually all ages, as shown in Figure 8. This implies that while the share of health care services being consumed by this group of people is relatively small prior to the 65 and older age group, the average person relying on public funds is more expensive than the average person in the general population.

Figure 8: Share of Total Expenditures and Population for Individuals With Only Public Health Insurance



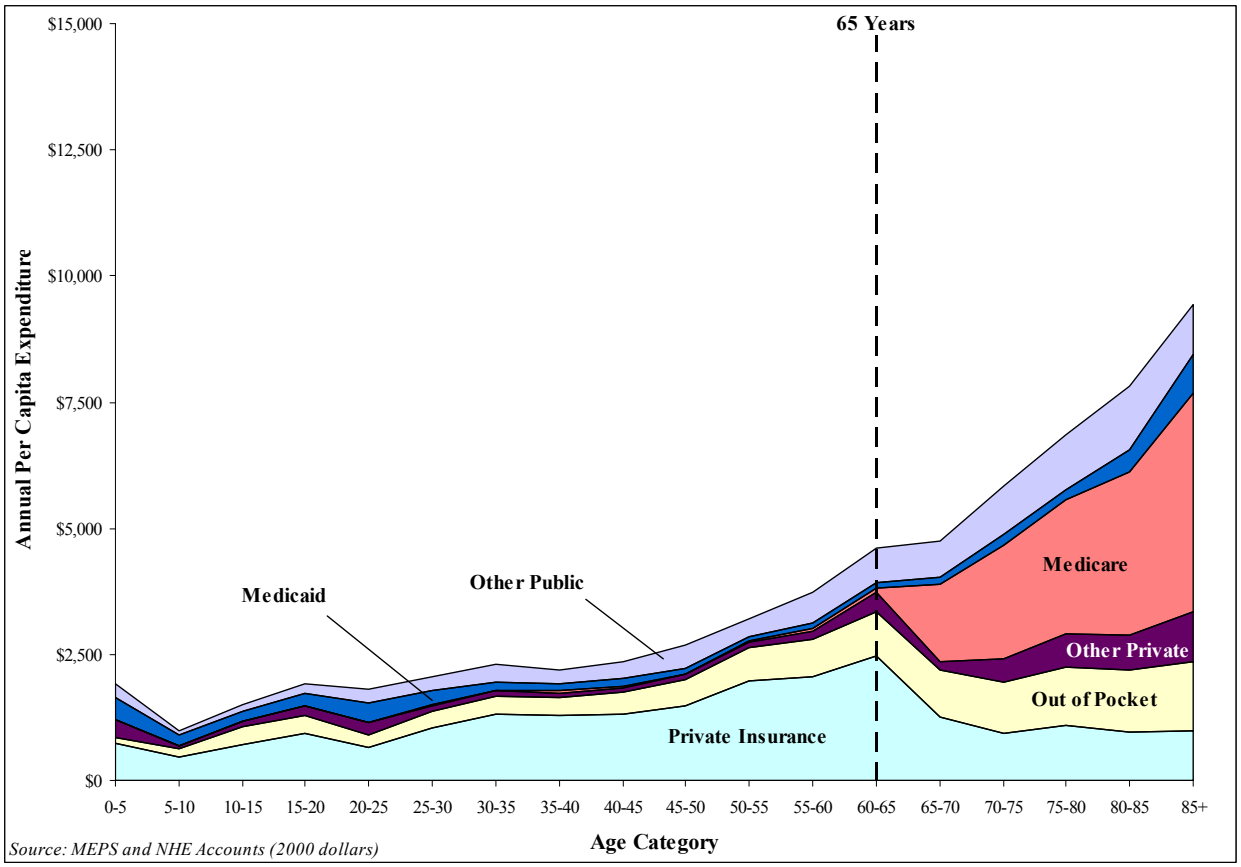
Note: Includes only individuals reporting Excellent or Very Good health status.

VII. Per Capita Health Care Expenditures

Per capita health expenditures are the key to analyzing the correlation between type of health care insurance and health care expenditures. Figure 9 shows the age profile for per capita health care consumption. The first thing to notice about the profile is that the overall slope does not dramatically change for people between the ages of 65 and 69 years old. The change in level becomes steeper with age, which should be expected as the elderly generally have more health problems. However, it is important to remember that the people in this sample are ones reporting themselves to be in good health, thereby implying that their declines in health with age are small relative to the general population. At age 65, Medicare expenditures become the major source of

funds for health expenditures, more or less substituting for the previous role of private insurance. Out of pocket expenditures tend to increase after age 65, as well.

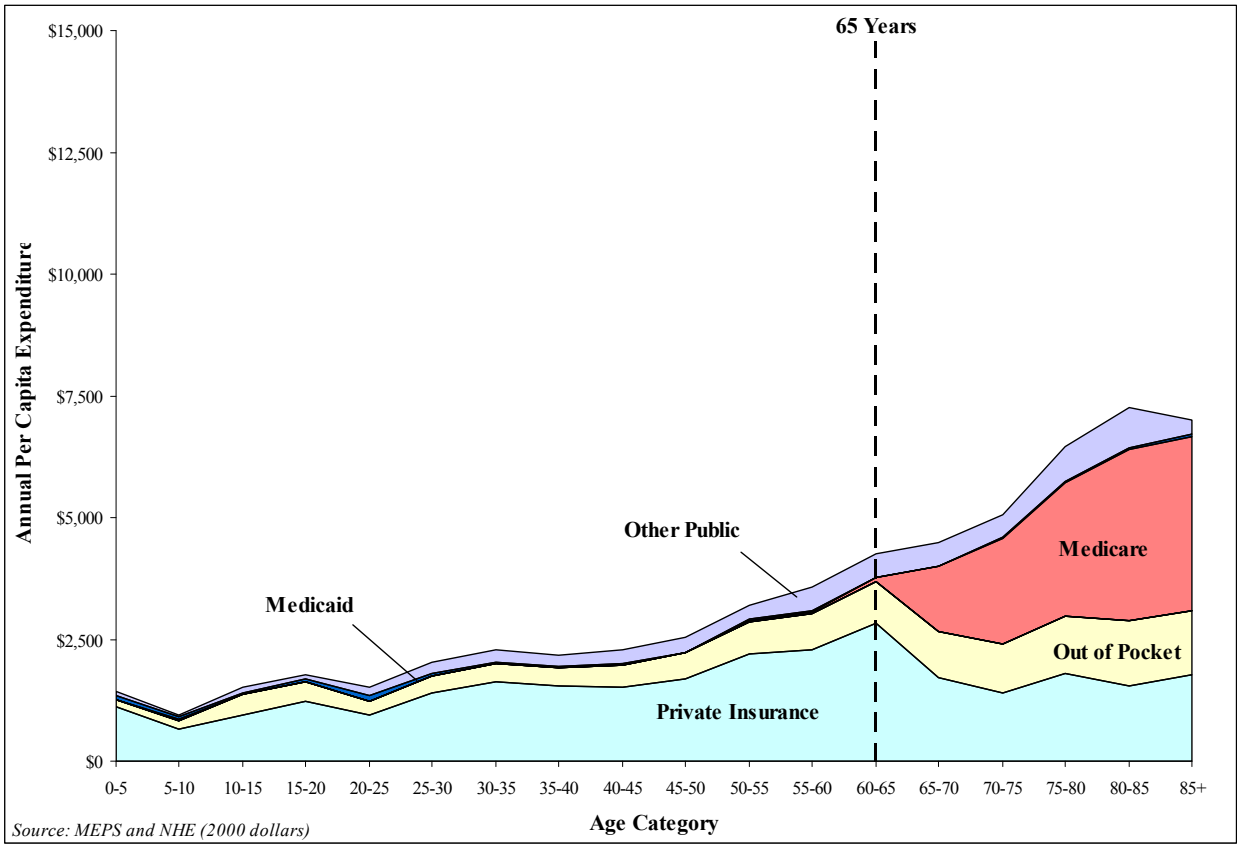
Figure 9: Per Capita Health Care Expenditures by Source of Funding and Age



Note: Includes only individuals reporting Excellent or Very Good health status.

Figure 10 shows the health expenditure age profile for individuals who have any form of private health insurance. This group represents the majority of the sample population at all ages, and therefore follows the overall sample age profile shown in Figure 9, above. Overall, annual per capita health care expenditures for this group come to $2,340.

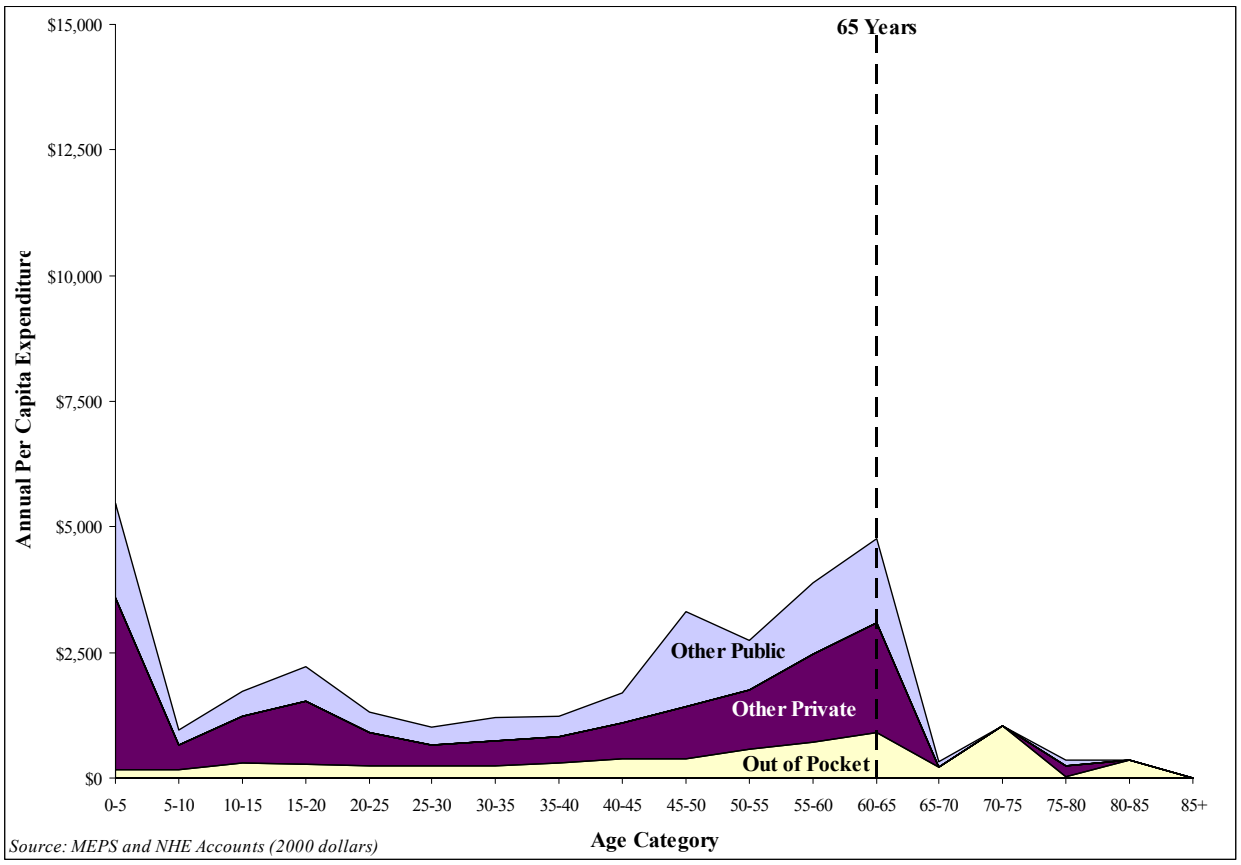
Figure 10: Per Capita Health Care Expenditures for Individuals With Any Private Insurance



Note: Includes only individuals reporting Excellent or Very Good health status.

Figure 11 shows the age profile for individuals without any health insurance. The level of spending for this group is consistently lower than the other groups. As expected, the number of uninsured people after age 65 becomes negligible.

Figure 11: Per Capita Health Care Expenditures for Individuals With No Insurance

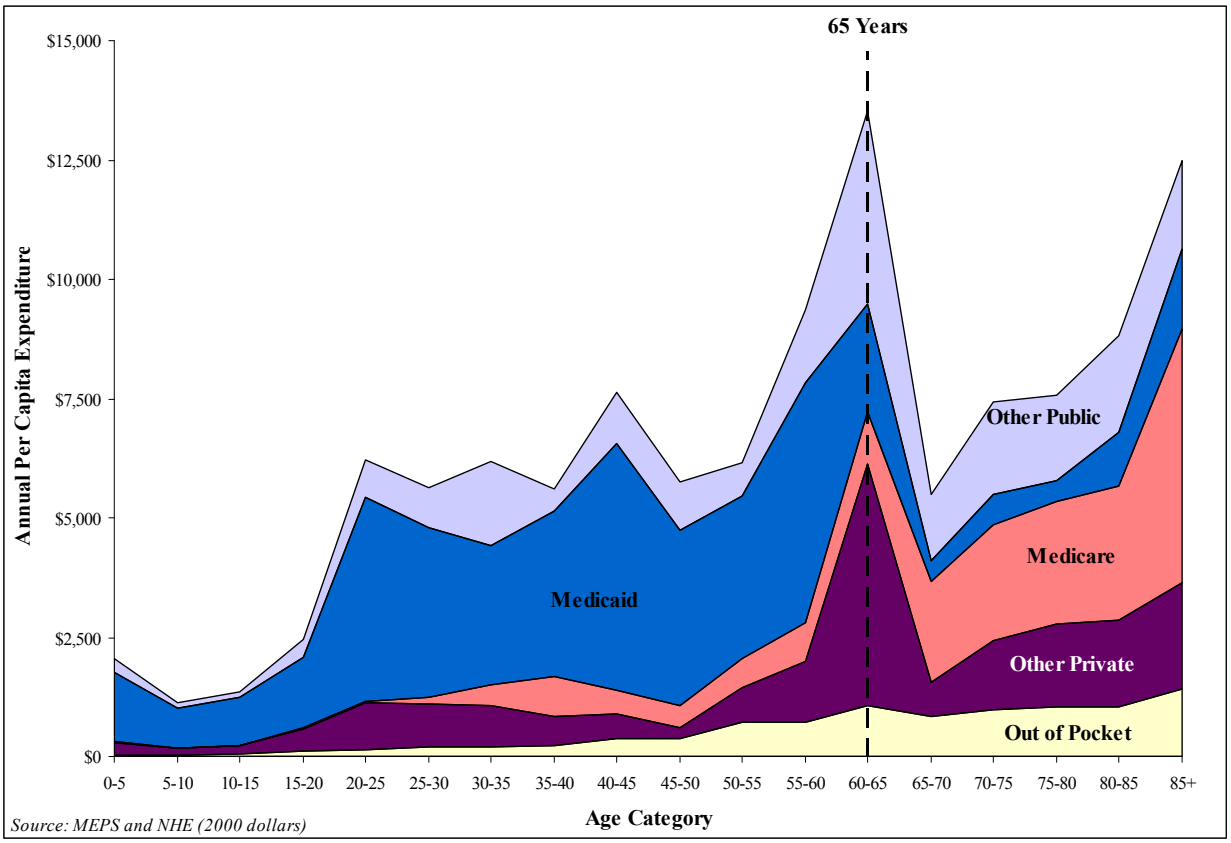


Note: Includes only individuals reporting Excellent or Very Good health status.

Figure 12 shows the per capita age profile for individuals with only public health insurance. This profile appears to be more erratic than the profile for individuals with private health insurance, which is largely due to its small sample size. For the ages of 20 to 64 this group only represents between 2 and 7 percent of the sample population in each age group. Yet, the difference in the level of spending relative to the total sample is striking. Average Medicaid expenditures alone for the 20 to 64 age group are close to $4,000 per person, which is greater than the sum of all sources of funding for the private insurance category. For ages 65 and older, the fraction of the sample covered only by public sources increases greatly as Medicare becomes the major source of funding. At ages at and above 65, this category remains at or above the levels shown for the private insurance category. The sharp increase in expenditures for the 60-64

age group appears to be an outlier, but the overall increase in levels of expenditures is persistent throughout the profile. It is worth noting that out of pocket expenditures remain quite low are until the ages approaching retirement.

Figure 12: Per Capita Health Care Expenditures for Individuals With Only Public Insurance

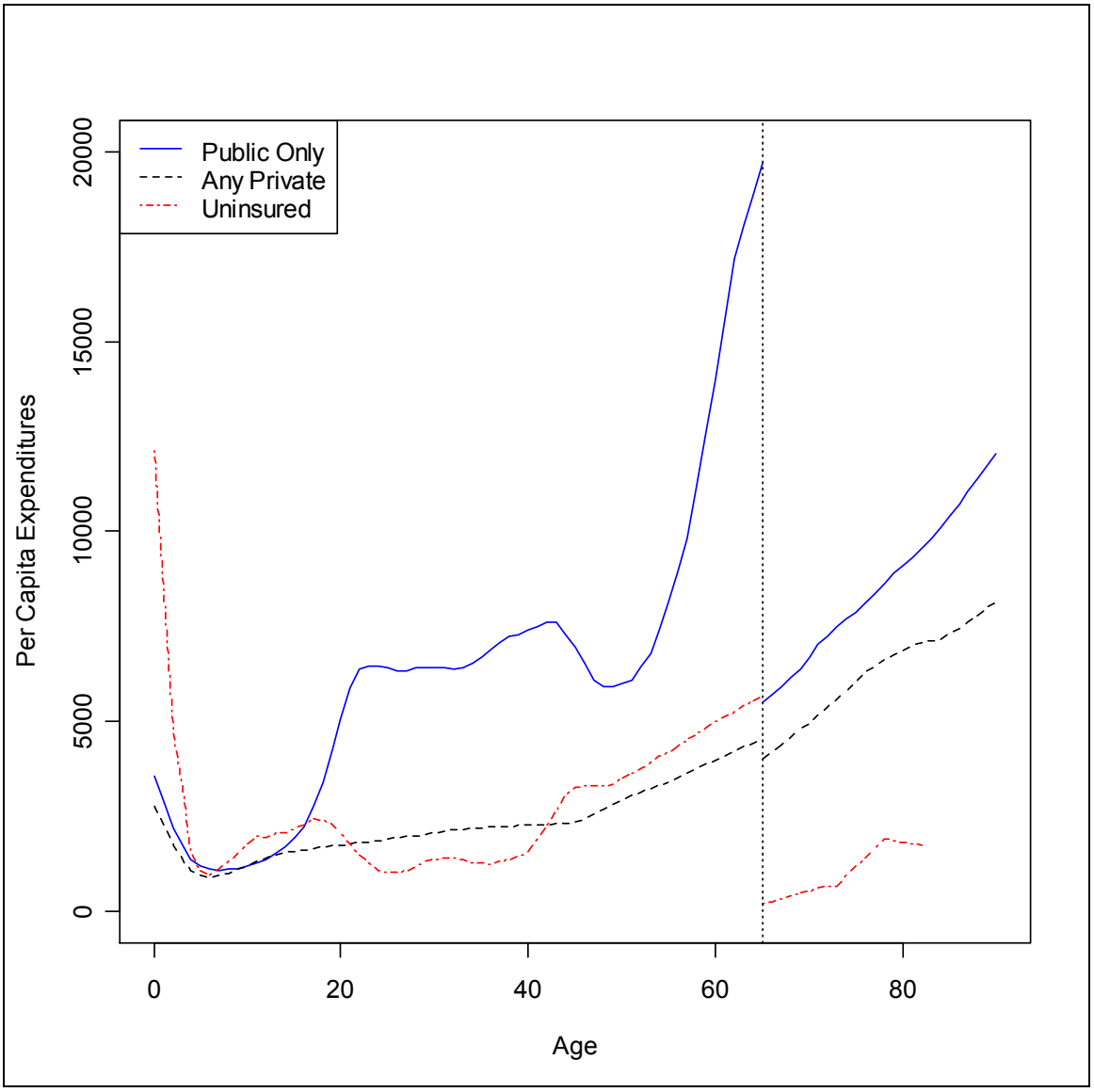


Note: Includes only individuals reporting Excellent or Very Good health status.

VIII. Comparisons Across Insurance Types

The most glaring observation from the per capita estimates of health expenditures is the overall difference in the levels of health care expenditures for people with only public health expenditures versus individuals with private insurance. Figure 13 shows the overall trends in health expenditures, with different trend lines for people before and after age 65.

Figure 13: Per Capita Health Expenditures by Type of Insurance Allowing For Distinct Trends Before and After Age 65

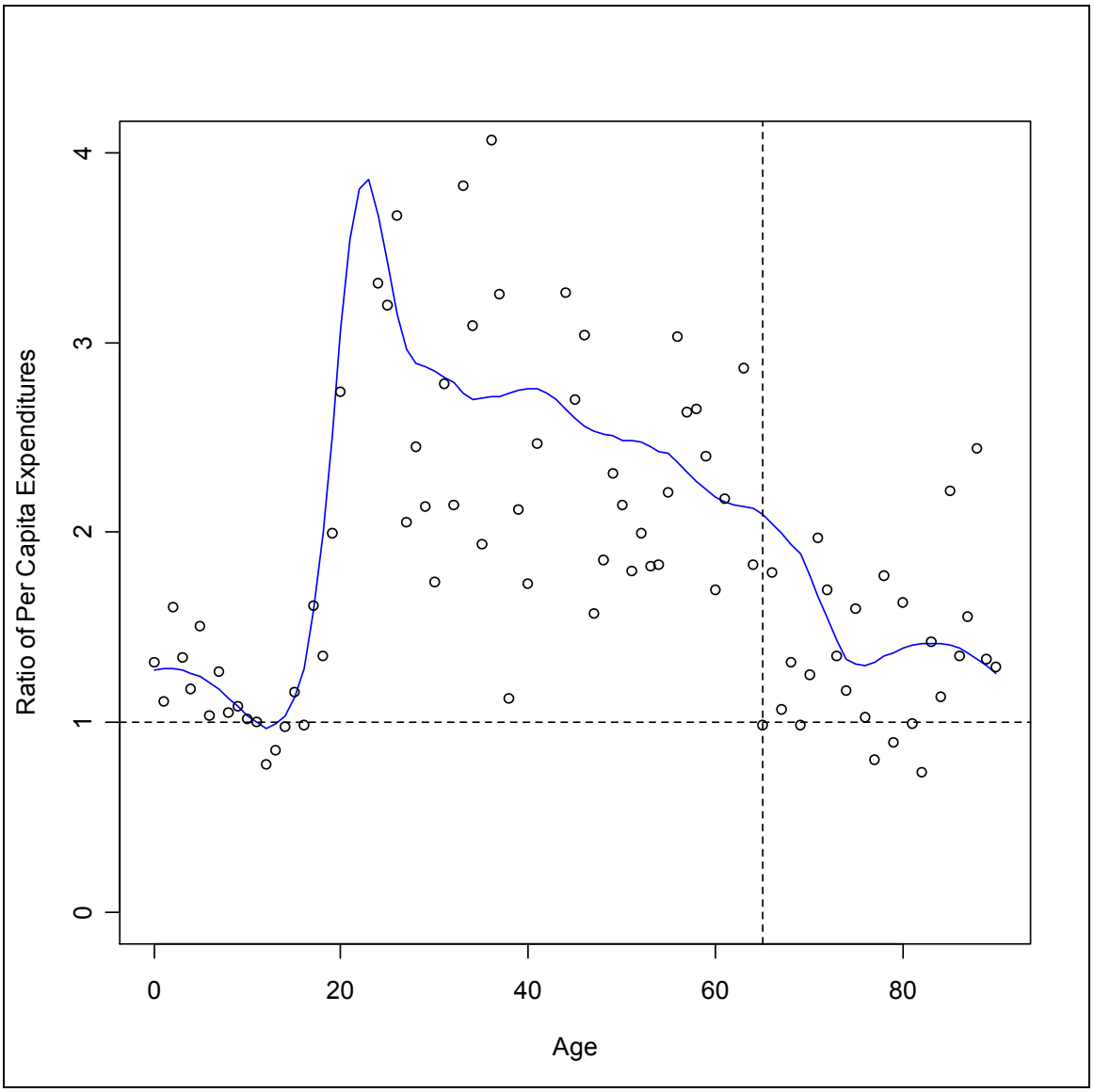


Note: Includes only individuals reporting Excellent or Very Good health status.

The large spike in public only expenditures just before the age of 65 is noise arising from a small sample size at that age. Nonetheless, there are clearly distinct patterns in consumption for individuals covered by public insurance only under the age of 65 versus over the age of 65. There is a significant shift in the denominator for the public only category, as the number of people aged 65 to 70 is roughly 6 times greater as the number of people aged 60 to 64. In the

opposite fashion, the number of uninsured people aged 60 to 64 is more than 25 times greater than the number of uninsured people aged 65 to 70. Per capita spending for uninsured people over the age of 65 drops dramatically. Spending by individuals with private insurance is consistent before and after age 65. Figure 14 shows the ratio of per capita spending for people with only public insurance relative to people with private insurance.

Figure 14: Ratio of Per Capita Health Care Expenditures for Individuals With Public Only Insurance to Individuals With Any Private Insurance



Note: Includes only individuals reporting Excellent or Very Good health status.

While no precise level of private versus public health expenditures emerges from these data, two noteworthy patterns stand out. First, it is clear that three distinct levels are evident: ages under 20, ages between 20 and 65, and ages over 65, with the largest gap being in the second group. Second, regardless of age, the ratio of per capita expenditures for those with only public insurance to those with private insurance is consistently greater than one. Per capita spending for these categories is shown in Figure 15.

Figure 15: Per Capita Health Care Expenditures for Individuals With Public Only and Any Private Insurance For Different Age Categories

Type of Insurance	Annual Per Capita Expenditures			
	Under Age 20	Age 20-65	Age 65+	All Ages
Public Only	$1,692	$6,610	$7,738	$4,007
Any Private	$1,414	$2,489	$5,505	$2,340
Ratio	1.20	2.66	1.41	1.71

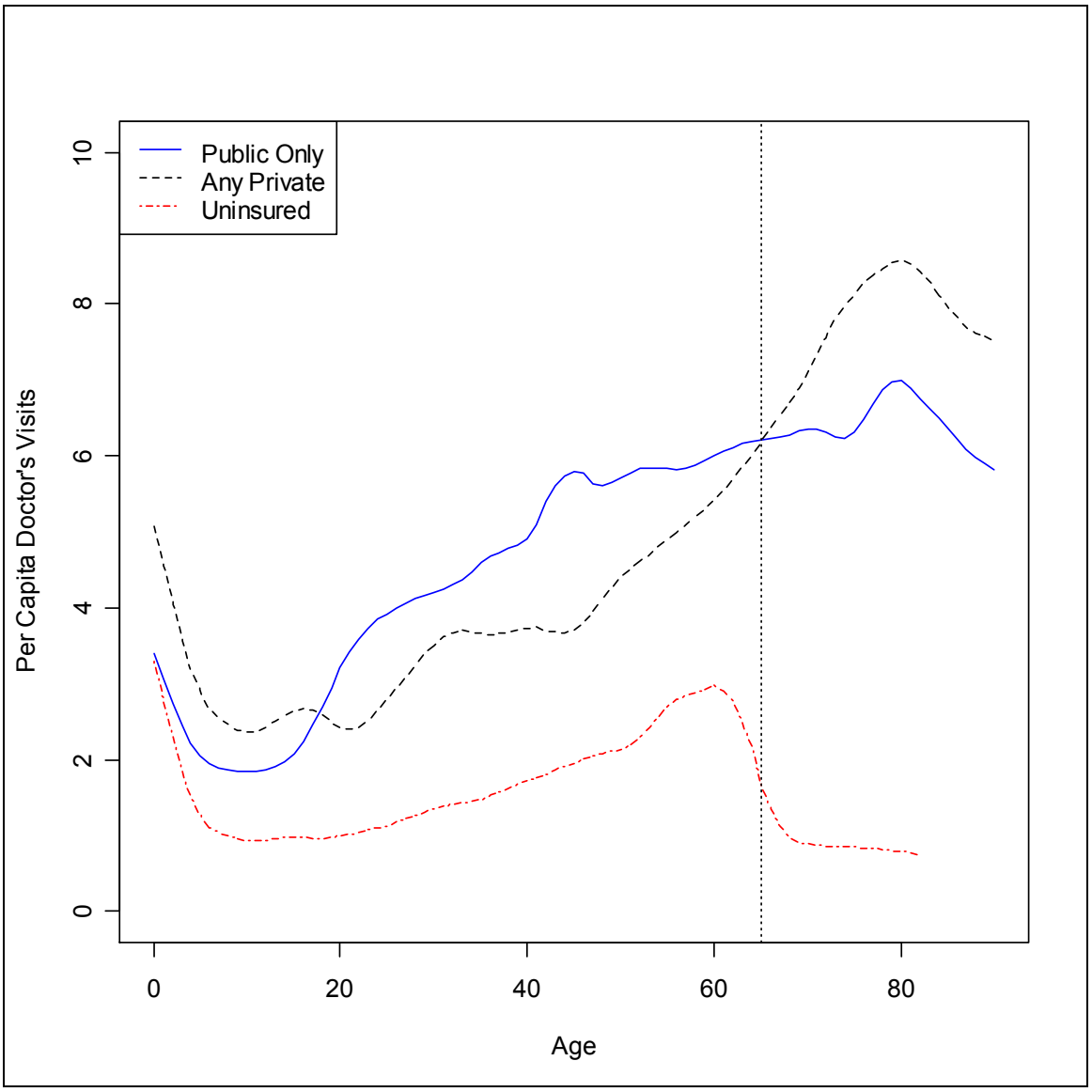
Source: MEPS and NHE Accounts (2000 dollars)

The striking difference in the middle age category most likely reflects other underlying differences with regard to the people that qualify for public health coverage prior to the age of 65. The case may be that those who qualify for public health coverage are more likely to have disabilities not captured in the crude measurement of self-reported health. Socioeconomic status may too play a role in these differences, as implied by the vast differences in income level for those qualifying for public health insurance at younger ages. The reason that these people qualify for public health insurance in the first place may be directly tied to more severe health needs, which in turn may be reflected in their lower earnings. Also, it is very likely that individuals with poor medical histories, despite their current health conditions, may be turned away from private health insurance companies, since these individuals are likely to be high-cost

customers whose lower average income may lead to problems paying their premiums. While it is impossible to establish a causal relationship here, it is entirely plausible that one exists.

Another view may paint a different story, however, with regards to services consumed at higher ages. While the above analyses have focused on total expenditures, there has been no mention of units of health care consumed by individuals in the different insurance categories. Figure 16 shows per capita doctor's visits for the three types of health insurance categories.

Figure 16: Per Capita Doctor's Visits by Type of Insurance

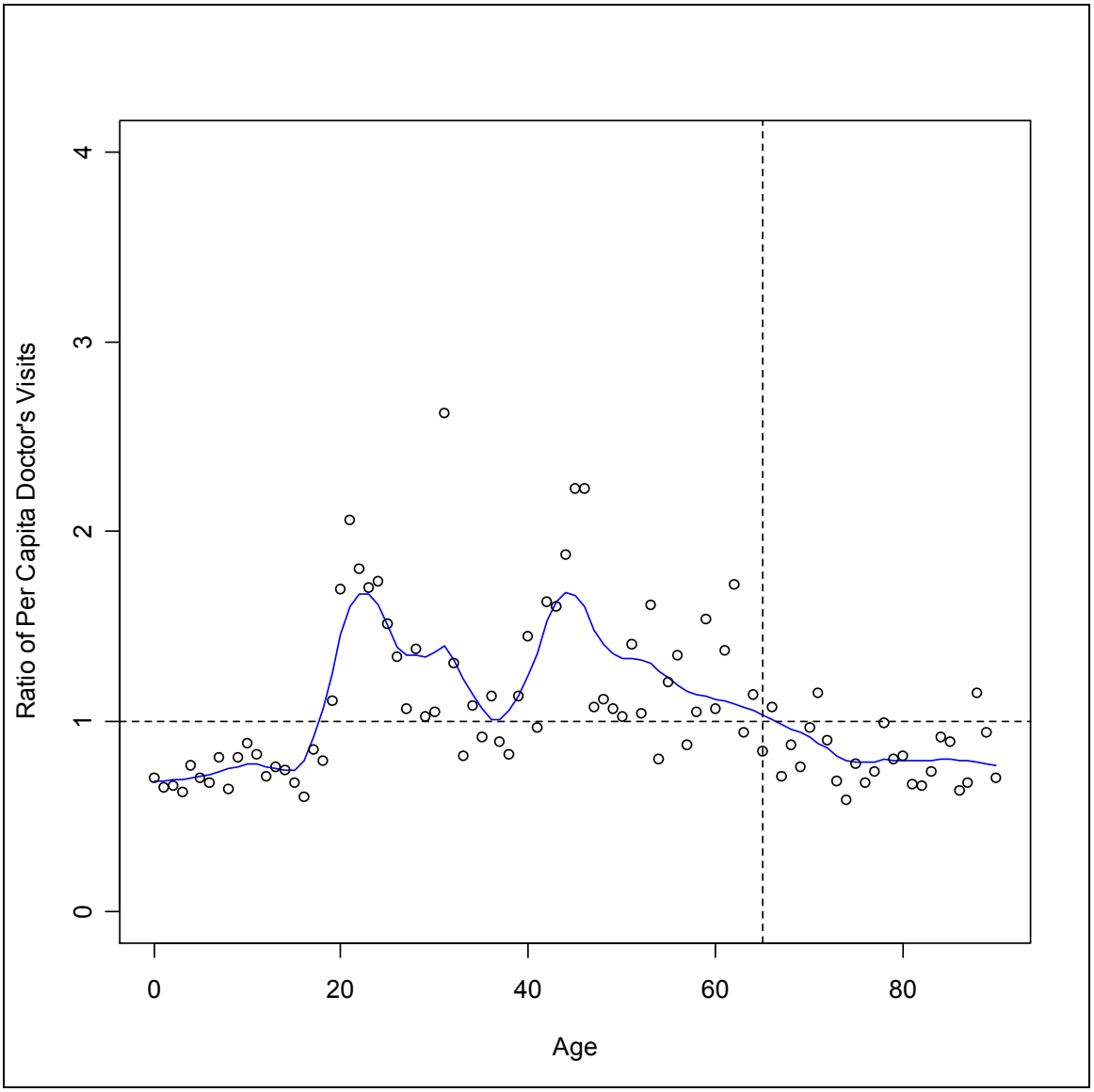


Note: Includes only individuals reporting Excellent or Very Good health status.

Beginning at age 20, individuals covered by public health funds alone tend to visit their doctors more, yet after age 65 when most people become eligible for Medicare, per capita doctor's visits are lower relative to privately funded individuals. This result is curious based on our previous findings that people covered only with public funds tend to consume more health services. A possible explanation is that individuals covered only by private insurance may require more serious medical procedures that fall outside of the realm of ordinary doctor's visits.

The decline at very old ages is likely due to an increase in nursing home and home health care, substituting away from direct office visits, as peoples' health declines. However, we should expect this decline to be modest relative to the total population, since this subset of the survey is presumably made up of the healthiest individuals. Figure 17 shows the ratio of doctor's visits for individuals with public health care only to individuals with private health care.

Figure 17: Ratio of Doctor's Visits Per Public Insured Person to Privately Insured Person



Note: Includes only individuals reporting Excellent or Very Good health status.

While earlier figures have shown that the average person covered only by public insurance is more costly than those with some private insurance, this figure suggests people with only public insurance do not go to the doctor's office more after the age of 65.

IX. Conclusion

Per capita health care expenditures are higher for those who use public health insurance as their sole source of health care insurance relative to those who use private insurance for individuals, even when controlling for individuals who classify their health status as either very good or excellent. Whether this consumption is justified or whether it takes on a certain tragedy of the commons is ambiguous, as this relationship is likely to be confounded by other factors, like socioeconomic status or previous health history. There may also be selection bias as high-cost individuals may be less likely to be accepted by private health insurance companies, thus placing the burden of higher cost individuals onto the public sector. Whether people consume more health services because they are publicly available, or whether public services become available because those who qualify are the most in need has not been established – the truth is likely a combination of the two scenarios. Still, understanding how people consume available health care services is an important step towards bringing per capita health care expenditures in line with international standards and to ensure that dollars spent are being spent effectively.

X. Further Research

A major limitation in this research has been the use of cross-sectional rather than longitudinal data. Analyzing individual consumption patterns as their eligibility status changes over time, especially for Medicare, will provide the most insight into the role of public health insurance on

individual health care consumption patterns. In addition, a longitudinal approach will allow for a better understanding of health outcomes associated with different levels of expenditures.

A comparison of United States consumption patterns to the patterns of other countries with similar and dissimilar policies regarding public health care funding and life expectancy outcomes will provide insight into effective health care spending. For example, many countries in Europe with comparable life expectancies have publicly funded health care systems with per capita health expenditures far below the United States level. Italy, for example has a publicly funded system with per capita health care expenditures of less than one third that of the United States, and life expectancy at birth of 80 years. Clearly, improved health outcomes can be achieved at lower cost.

The United States' legal system may be a contributing factor to high medical costs. Many studies have found that doctors tend to order costly medical tests that they view as unnecessary for fear of facing malpractice lawsuits if every possible precaution is not taken for a given patient – a practice referred to as "defensive medicine."[4] This behavior could bias per capita spending results for individuals with public insurance if doctors know that ordering additional tests would cover their own liability, without directly affecting their patients financially. The role of lawsuits is likely a major driver of the increases in overall medical expenditures in the United States, especially relative to other countries where litigation is less pervasive.

[4] See Studdert, D. The Journal of the American Medical Association, June 1, 2005; vol 293: pp 2609-2617.

XI. References

- **United States Department of Health & Human Services**
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- **Bureau of Economic Analysis (www.bea.gov)**
- **World Health Organization (https://www.who.int)**
- **World Bank (http://www.worldbank.org)**